

What is claimed is:

1. A method of modifying the hydrophilicity of a porous article comprising:
5 providing a reaction chamber having a capacitively-coupled system comprising at least one grounded electrode and at least one electrode powered by an RF source;
generating a plasma in the chamber thereby causing an ion sheath to form around at least one of the electrodes;
locating a porous article in the ion sheath; and
10 allowing reactive species from the plasma to react with the article surface and pore interiors
whereby the hydrophilicity of the article is changed such that the bulk wetting properties of the article are improved.
- 15 2. The method of claim 1 wherein the article pores are smaller than the mean free path of any species in the plasma.
3. The method of claim 1 wherein treatment of the porous article is continuous.
- 20 4. The method of claim 1 wherein the plasma comprises silicon.
5. The method of claim 1 wherein the porous article is within the ion sheath proximate the powered electrode.
- 25 6. The method of claim 1 wherein the porous article is selected from the group consisting of foams, nonwoven materials, woven materials, membranes, frits, textiles, cloths, and microporous articles.
7. The method of claim 1 wherein a shadow mask is used to produce an article
30 having a patterned treated area.

8. The method of claim 1 wherein a shadow mask is used to produce an article having a hydrophilicity gradient.

9. The method of claim 1 wherein the partial pressures of the species in the plasma
5 are controlled to provide the desired elemental composition for the resulting article.

10. The method of claim 1 wherein the powered electrode is a rotating drum.

11. The method of claim 10 further comprising a second rotating drum powered
10 electrode.

12. The method of claim 1 wherein the article has two parallel major surfaces and is treated on one major surface.

13. The method of claim 12 wherein the article is also treated on its second major
15 surface.

14. The method of claim 1 wherein the treatment comprises attaching to the article surface and pore interiors by covalently bonding two or more species selected from the
20 group consisting of oxygen, nitrogen, silicon, carbon, hydrogen, sulfur, and combinations thereof.

15. The method of claim 14 wherein a silicon-containing film is deposited and the article is post-treated with an oxygen plasma.
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16. The method of claim 15 wherein the silicon-containing film is diamond-like glass.

17. An article comprising
30 a microporous membrane having a pore size with a lower limit of about 0.05 micrometers and an upper limit of about 1.5 micrometers, the membrane having on

its surface and in its pores, a plasma-deposited composition that improves the bulk wetting properties of the article.

18. The article of claim 17 wherein the plasma-deposited composition contains
5 silicon.

19. An article comprising
a porous article having a patterned plasma-deposited composition that improves
the bulk wetting properties of the article.

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20. An article comprising
a porous article having two major surfaces wherein one major surface has a
hydrophilic plasma-deposited composition that improves the bulk wetting
properties of the article, and the other major surface is hydrophobic.

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21. An article comprising
a porous article having a patterned plasma-deposited composition.

22. The article of claim 21 wherein the plasma-deposited composition is patterned
20 in a series of circles.